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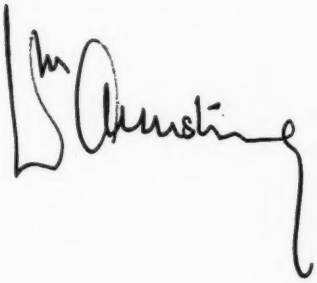
Foreword

By Sir William Armstrong, PC, GCB, MVO
Permanent Secretary, Civil Service Department and Head of the Home Civil Service

This is the first issue of the old *O & M Bulletin* in a new format and under its new title, MANAGEMENT SERVICES IN GOVERNMENT.

The scope and character of Management Services, like so much else in government, are changing. It is right for this journal to change with them. Its circulation has now risen to 6,500 copies, about one-third of which go outside the Service and to nearly 100 countries. Within the Service it is now circulated not only to Management Services staff, but also to line managers at all levels. This wider interest reflects a widening of its range to include material on personnel management and more general management topics. I wish it well under its new title.



Let's be precise

LORD BROWN, PC, MBE

"The Meaning of Some Management Terms", which was issued as a supplement to the May 1972 edition of the *O & M Bulletin*, has proved most popular—over 7,000 copies have already been distributed. Lord Wilfred Brown, former Minister of State at the Board of Trade and author of many books and papers on organization and management, wrote to us on reading the supplement, and the article which follows is the outcome of his letter.—*Editor.*

> "*The first cause of absurd conclusions I ascribe to the want of method, in that they begin not their ratiocination from definitions, that is, from settled significations of their words; as if they could cast account, without knowing the value of the numeral words one, two and three.*"
>
> Thomas Hobbes' *Leviathan.*

Many have seen the above quotation before, but I think it will have to be repeated thousands of times before it results in the stricter semantic discipline which would be of such general benefit to all.

The salient contribution of science has been to describe our physical environment in more or less objective terms. One of the most important factors in this achievement has been strict semantic discipline. This has resulted in the emergence of many thousands of boundary definitions of the meaning of words which have been accepted internationally.

For example, the word "work" is precisely defined by scientists as "the operation of a force in producing movement of mass through space". That is, of course, a definition of physical work. But we use this word in quite a different sense when we talk about work carried out by employed people. This may involve some small amount of physical work, but it is predominantly an allusion to psychological work. Consider how undisciplined we are when we try to use the word in this way. I doubt if most of us would protest if somebody said to us: "That was hard work doing the work I was given at work today".

I propose a definition which was consistently used by at least all managers in the company I managed until a few years ago: "Employment work is the exercise of discretion within bounds and towards an objective both set by higher authority". I suspect that many reading that definition will have objection to it. But before attempting to justify it we ought to consider on what basis we can justify any definition.

My mentor on that question is Karl Pearson,[1] who suggested that, "In order that a conception may have scientific validity, it must be self-consistent and deducible from the perceptions of the normal human being". Karl Pearson uses the term conception where I use definition. I use "definition" or "boundary defined concept" because concept has been used so loosely in recent years that its currency is somewhat debased.

I would freely render Karl Pearson as follows. To construct a definition (or a concept) one must first agree, with those who would use it, the data or observations or perceptions upon which it is built. Once the perceptions are agreed, then we can deduce the definitions from those perceptions. Many "definitions" exist but they are not satisfactory because it is not possible to determine objectively what lies within or without their ambit.

In a recent supplement to the *O & M Bulletin*[2] examples were given of current attempts in dictionaries and other writings to define the meaning of a number of terms. None are boundary defined. For example, under the heading "Management Relationships" appears these words: ". . . the expression line management is used to identify those managers who have direct responsibility for accomplishing the aims and objectives of the enterprise". This begs the question for who is able to deduce from that "definition" which officials have "direct responsibility for accomplishing the aims, etc. . . ." Thus nobody knows who are and who are not managers. This supplement does indeed highlight the existing absence of boundary defined definitions and the barriers to accurate communication which result. It is clear that a methodology of defining sociological phenomena is lacking though science has blazed a trail in respect of physical issues long ago. What a mess we would be in if we were confused today about the separate meanings of, say, atomic fusion and atomic fission, or velocity and acceleration! A former engineer colleague once, during the last war as a junior RAF officer, sat in the "back row" at a very important meeting of RAF top brass, about the provision of electrical components for weapons. The top brass decided that certain vital equipment, which was available, could not be used because its amperage was unsuitable, but they had confused amperage with voltage. Finally, my friend could contain himself no longer and burst forth. By doing so he prevented a very serious mistake. It is sad to relate that he was subsequently reprimanded.

Returning now to the definition of employment work, I would suggest that we can all agree on the following perceptions. Humans are employed because they have minds which enable them to make choices between different courses of action, that is, decisions. People are employed to a lesser and lesser extent as a source of physical work. Largely, therefore, people are employed to use discretion on tasks set by higher authority. But the extent of each person's discretion on tasks set by their manager is limited by policies, instructions, routines, etc., established by higher authority. Every employed person has to use some degree of judgment, notwithstanding that the extent to which he does is limited by policies set by higher authority.

If we can agree those perceptions, then I think we can probably agree my suggested definition of employment work. It follows from this definition that the most junior employees make decisions. This is in contrast to the widespread theme that senior officials and managers

make all the decisions and that lower echelons simply carry them out according to set routines. The error of such thinking is easily demonstrated by analysis of the work content of, say, clerical assistant roles. The persons occupying them can make a serious contribution to "gumming up the works" by failing to use "common sense" which is a colloquial description of sound judgment.

In 1970 a letter from a very senior citizen to *The Times* commented to the effect that administrative class officials were not so much engaged as their industrial counterparts in making decisions because so much of their time was spent advising ministers! The writer apparently had overlooked the immense national importance of the kind of advice which officials *decide* to give to ministers. So much for the widespread myth that civil servants do not make decisions. But we will not kill off the myth unless we use language in a more disciplined manner.

The definition of work I have proposed also gives a new meaning to that much abused word "policy". I have used it to refer to the boundaries which limit the area over which a person is authorized to make decisions. In this sense it is included in the work of every person who has subordinates. Every manager has to make decisions which establish tasks and set limits to the decision-making activity of his subordinates. In this sense he is establishing policies to which his subordinates must work. I think it is useful to use the word policy in this way because it makes every manager or superior explicitly aware of one of his own major activities. Moreover, it is consistent with the manner in which the word "policy" is used. For example, most people are capable of the following utterances: "The Government makes policy, the Civil Service executes it"; "Boards of Directors formulate policy and managers execute it"; "Managers make policy and subordinates execute it"; and it used to be said, "Administrative class officials make policy and executive class officials execute it". Is it not clear, therefore, that any attempt to relate the word policy to some specific level of decision-making is inconsistent with current usage of the word?

Yet another outcome of this definition of work is to shed light on the aspirations behind the desire for "more participation". My own experience indicates that this is certainly not a desire to share all decisions with managers, but simply to take an equal part in establishing the policies which set boundaries to the authority of managers.

I will not explore that issue further because space does not allow it. I mention it to demonstrate that once one begins to establish and agree upon boundary defined concepts the repercussions reach far beyond a mere improvement of communication. I have dealt more fully with the definition of work elsewhere.[3]

For further exemplification of my theme I turn to the definition of the term "manager". Here may I make another point about the procedure for arriving at definitions? One has to *select* the perceptions upon which agreement is required. We must select those perceptions which are as nearly as possible unique to the phenomenon we seek to define.

The perceptions which I think are required for the purpose of defining the term "manager" are as follows. In employment hierarchies there are some roles to which more work is allotted than the occupant can personally perform. He, therefore, perforce has to get some of the work of his role done for him by others. Nevertheless, he remains personally accountable for the totality of the work in his own role.

If one puts these perceptions to a commercial or industrial audience, one invariably obtains virtually unanimous agreement. I suspect, after five years of service in government, that some civil servants will not agree with those perceptions. But I would boldly maintain that whilst those perceptions may not be a wholly accurate perception of the state of affairs in the service, that to that extent organization in the Civil Service is at fault. It is interesting to find that if one puts these perceptions to a body of university undergraduates, argument often breaks out. This, I think, is because undergraduates are lacking in experience of genuine employment situations and their perceptions are frequently not based on direct observation.

Proceeding on the assumption that these perceptions *are* agreed, then it is possible to deduce that if the occupant of such roles is to be able to be held accountable for all the work delegated to him then *minimally* he must have authority:

(*a*) To veto appointments to immediately subordinate roles.
(*b*) To be *solely* accountable for the assessment of the work of those immediate subordinates.
(*c*) To be able to insist that persons occupying immediately subordinate roles be transferred elsewhere.
(*d*) That the decisions arising from the foregoing degrees of authority are based, in all cases, on the potential or actual work performance of the subordinate and not on other factors, and that decisions under (*b*) and (*c*) are subject to right of appeal by the subordinate.

Put briefly, the logic of such minimal authority can be justified as follows. A (the manager of B) cannot hold B accountable for all the work in the latter's role:

(*a*) If A insists that B accepts as a subordinate a person in whom B has no confidence.
(*b*) If A insists on assessing B's subordinates as a basis for setting tasks and distributing work to them.
(*c*) If A insists that B retains as subordinates persons who, in B's judgment, are inadequately matched to the work which he has to delegate to them.

Again I have dealt very briefly with the process of deducing these minimal degrees of authority from the perceptions because I have done so at length elsewhere.[4] Furthermore, my object in writing this article is not in fact to provide a series of definitions, but to draw attention to the importance of doing so and to indicate a means of arriving at

definitions which enable any reasonable person to decide what lies within or without their ambit.

In a company employing 1,000 people there are, in fact, 999 managerial-subordinate relationships. It is, perhaps, the most important formal relationship in employment and certainly the most frequent. If we accept the three degress of authority I have outlined as the minimum required to enable one person to be accountable for the work of others, then one can discover whether or not a role is managerial by asking three questions appertaining to these three degrees of authority. If the answer to any one of them is "No" then it is not, in my terms, a managerial role. But a word of caution is needed here. If one asks a civil servant if he can cause a subordinate to be removed, he will usually say "No". But if one pursues the issue one finds that if an official is prepared to make sufficient "noise" to the personnel division, then after due delay that subordinate will be posted elsewhere. Thus although, *de jure*, that degree of authority does not exist, *de facto*, it probably does in most cases, though officials are, I think, justified in assuming that it does not owing to lack of clarity. It is, in other words, essential to get at the extant situation rather than accept what is assumed.

By the same process, it is possible to set up boundary definitions of the many key words which we all use when discussing organization and administration.

I stated at the outset that one of the major achievements of science has been to provide objective descriptions of our physical environment. One of the major objectives of social science should be to describe our social environment in equally objective terms. Much of this environment is concerned with roles, role relationships, organization structure and social institutions in general. But without disciplined language this is not possible.

We cannot build physical structures like bridges, town centres or power stations without precise plans and precise language in which to describe them. Why, then, is it thought possible to build social mechanisms and social institutions without such precise language? I do not know the answer to that question, but the vagueness of language has, I believe, a much greater bearing on human behaviour than is generally realized.

Kurt Lewin, the MIT psychologist in a memorable essay[5] drew attention to the fact that the ancients believed it possible to understand the behaviour of things from a knowledge simply of their intrinsic nature—whereas emerging scientific thought realized that behaviour was a function, not only of the intrinsic nature of the thing, but also of its environment. (No engineer can predict the load at which a steel girder will distort unless he knows whether it is likely to be subject to high temperature.) Lewin pointed out that when we consider the behaviour of people we still think like the ancients because we continue to regard behaviour as a function of personality alone. This is scarcely

to be wondered at if we are unable to describe objectively the sociological environment of people because we lack the necessary language.

The sociological environment of work is made up of accountability, authority, role relationships, organizational structure, tasks, policies, etc. Concepts are the building blocks which each of us has to use to create a mental model of the structure of roles surrounding us. But if shared concepts do not exist, our personal models will differ from those of subordinates, colleagues and superiors. This is a recipe for confusion.

A rather trivial example will illustrate the point. As a Minister in the Board of Trade I discovered an extraordinary rule. It laid down that when an exporting company was provided by our overseas post with the names of potential agents to help sell its products, the names of other companies for whom the agent was already acting must not be disclosed to the UK exporter. Obviously the rule was nonsense because those same agents were busy advertising in their own country the names of the companies which they represented. Furthermore, the classic way for a British company to choose an agent was to enquire, from the companies which the agent already represented, about his effectiveness. The reason for this rule lay in confusion over the meaning of the term "agent". It had been interpreted to cover distributors and wholesalers as well. Wholesale firms in overseas countries certainly are right in insisting that the names of their other suppliers are not disclosed. The rule was abolished after the terms agent, distributor and wholesaler had been defined in the relevant BOT Export Handbook. I often wondered how many British companies, deprived of the necessary information, had appointed ineffective agents because of this semantic confusion.

There is much resistance to greater semantic discipline. Firstly, because many people erroneously assume that objective definition is not possible in sociological matters. I think this must be the reason why, after 25 years of existence, the British Institute of Management has not yet defined the term "manager". Many people assume that the establishment of a definition is an arbitrary act and that widely differing meanings attached to the same word are entitled to an equal claim to common currency. The consequence of such thinking is the assumption that there is no real likelihood of a single definition being agreed and, this being the case, the effort is not worth while. But, as I have already said, if we follow Karl Pearson and, indeed, the rules of physical science, we shall arrive at shared definitions.

The second reason is the belief that precision, objectivity, definition, formal organization, etc. create inflexible situations, whereas, lack of these phenomena allows of flexible adjustment to changing circumstances. Again, my experience is the contrary. Anybody who wants to change an organizational structure, a role or a routine, has first to have an accurate description of what it is that is to be changed. The proper prelude to change is, therefore, description of the *status quo*. The erroneous idea that formality and precision are components of inflexibility, stems from the assumption that their purpose is to prescribe in

advance exactly what everybody ought to do in different circumstances, whereas, if the definition of work which I propose is accepted, the purpose of definition and formalization is to build into each role that degree of authority to use judgment which the occupant of the role can discharge. If it is found that the occupants of roles are able to carry accountability for exercising more authority and discretion, then the boundaries of the roles can be changed accordingly.

This is too short an article to do justice to the importance of my subject, but I hope I have gone some way towards establishing the case for the introduction of a growing series of boundary definitions. There has been a rather strange absence of attempts to do so. Can I, therefore, presume to suggest that, if I have stimulated anybody to make the attempt, before doing so, they turn to those which have been established over the past 25 years in the Glacier Project.[6] These terms have been much taught in universities and technical colleges and have gained some currency. It would be a pity if the Civil Service, for example, unnecessarily used a series of terms which were arbitrarily different from those growing into use in many industrial companies.

Let me finish on a daring thought. Most Bills presented to Parliament have an interpretation clause (usually at the end!) stating the meaning to be attached to the terms used in the Bill. But different bills give different meanings to the same words. It would be, I submit, a splendid thing if all the words appearing in all the interpretation clauses of all recent Acts were extracted by a small research team. An official list of boundary definitions could then be compiled. These could be consistently used in future Bills. Future interpretation clauses would simply state that all words used in the Bill, which already appeared in the official list of definitions, referred to those definitions. There might occasionally be a necessity, in order to overcome drafting difficulties, to give a word a different meaning from that in the official list and these would appear in the interpretation clause as exceptions.

I have little doubt that if this were done and the official list made public then, within a few years, a large number of boundary definitions concerned with sociological matters would come into quite general usage. Industry, commerce, the universities and the publishers of dictionaries would surely begin using such words in the sense of the official list. I am sure again that Hobbes, had he lived today, would have approved such an idea.

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Group Relations Training

A. F. P. HOOLE, Civil Service Department

Mr. Hoole is in the Management Personnel (Training) Division of CSD, and is Chairman of a CSD Committee which was set up to advise departments considering the use of group relations training methods.—*Editor.*

> "*The basic fact of social psychology is that every human individual is a member of a number of social groups (family, church, club, workshop, etc.) and his behaviour is variously determined by his group memberships and by his emotional relations with other members of the groups to which he belongs.*"
>
> Everyman's Encyclopaedia, 1972

Group Relations Training is concerned with training methods which, by providing opportunities for the study of inter-personal behaviour, are aimed generally at improving the ability of people, as members of a group, to work with and understand each other. Most orthodox training techniques, or forms of training, rely largely on intellectual learning by the trainees. Group relations training, on the other hand, relies partly on intellectual learning but, since behaviour is largely influenced by emotions and personality, it relies mainly on experiencing behaviour emotionally. In many forms of group relations training, the behaviour of the participants becomes the subject-matter for study, and the objectives of the training are concerned mainly with matters such as leadership, inter-personal, intra- and inter-group relationships, and problem solving within groups.

In recent years, there has been a continuing interest in group relations training and, early in 1971, a CSD Committee was established to advise departments considering the use of group relations training methods. The Committee is chaired by the Management Personnel (Training) Division and its other members include representatives of the Behavioural Sciences Research and Management Services (General) Divisions, and the Civil Service College. One of the tasks undertaken by the Committee was the examination of some of the various methods of group relations training with a view to forming some conclusions about their strengths and weaknesses. The Committee study is an on-going one and the purpose of this article is to describe briefly the work done so far and, more particularly, to present the (tentative) views which the Committee has formed on the factors which need to be considered by organizations contemplating the use of training of this kind.

For the purpose of the study, group relations training was defined as: "Training in which an important aspect is the study of inter-personal and group relationships and in which experiential learning in group

situations is involved, leading to improved effectiveness of individuals in dealing with group situations." This definition excluded the more orthodox use of syndicates and management games in training and also training in "committee work" as generally provided. In these cases, even though some experiential learning in group situations is involved, the main task of the students is not the study of inter-personal or inter-group relationships in a "here and now" situation, but the acquisition, within a fairly highly structured situation, of specific skills and knowledge related to the subject under discussion. Forms of training concerned primarily with problem solving or decision making, however, were regarded as falling within the definition, provided that the study of inter-personal and/or inter-group relationships was a significant feature of the training.

In the survey so far completed, 16 methods of group relations training were examined and, although their strengths and weaknesses could not be expressed in comparative form, each could be classified according to a number of discriminating factors, which were grouped into three categories: those concerned with "skill" (sensitivity, unfreezing attitudes, skill in group working, leadership and problem solving); those concerned with "knowledge" (of group working and of behavioural science); and those concerned with the extent to which the training method, or course, is structured. From this information it was possible to identify main areas of emphasis.

It was not surprising to find that most forms tended to emphasize training in either inter-personal sensitivity (this term embraced the sensitivity, unfreezing attitudes and leadership factors) or problem solving. Training in the former is concerned with the individual as a member of a group and is directly concerned with the *behaviour* of the group as it happens, whereas training in problem solving is mainly concerned with the examination of the performance of the group in carrying out specific tasks prescribed by the course organizers. The degree to which these two main areas of emphasis were found in each of the training methods examined was assessed broadly. In doing this, it was appreciated that there was a risk of over-simplification and that further research might indicate the need to reconsider the area of emphasis in which a particular form was included. However, and accepting these limitations, five patterns were identified on the basis of the discriminating factors which had been used to classify the various forms of training. One of these patterns covered forms of training emphasizing knowledge areas only, but the remainder were all concerned with forms of training in which the inter-personal sensitivity and problem solving factors were present although in differing degrees. All except two of the forms examined qualified for inclusion in one or other of the patterns.

It was recognized that the identification of discriminating factors and of the patterns emphasizing the objectives of the various forms of training would be a pre-requisite to the selection and use by depart-

ments of group training schemes. But, at the same time, the relevance of particular forms of training would need to be related to particular situations and not to "types" of situations in any general way. This being so, the Committee examined the issues which departments contemplating the use of group relations training methods would have to take into account, and the following are their thoughts, still provisional at this stage of the study, on some of the issues involved.

- *Identification of training needs*

It is important to ensure not only that training needs are accurately identified, but that the needs so identified are those which require treatment by group training rather than by orthodox training methods. It is not uncommon for training solutions to be sought to non-training problems and with any training activity it is important to ensure that the needs to be met are, in fact, training needs. However, because of the difficulty in fully understanding the close relationship between the attitudes of individuals, work performance and the culture of organizations, there is, with group relations training, an even greater risk of confusing training with non-training needs and, furthermore, an incorrect diagnosis might well exacerbate the problems that the training is designed to solve. Before group relations training methods are chosen, therefore, the objectives of the training and its likely results should, as far as possible, be established before any training is undertaken.

- *Group relations training as part of organizational development*

The possible use of group relations training methods as part of organizational development was considered, and the tendency of companies which had undertaken management development to move towards the training of management as a group and then to progress into the area of organizational development was noted. This is fairly new territory, but there are indications that some forms of group relations training might be appropriate for collective training of small work units and for training managers of related work units. These possibilities and perhaps also the part that such training methods might play in the process of deliberate change in the culture of large organizations need further examination.

- *Support of management*

To be successful, group relations training methods must have the support of top management, and all levels of management must be prepared for the changes in attitudes of staff who have undergone training of this kind.

- *Internal or external training?*

The appropriate type of group relations training in relation to the environment of the organization and the conditions under which group relations training should be conducted inside or outside the organization to which the "trainees" belong are important factors. The risks, in

regard to some types of group relations training methods, of including in the same training group people who are already known to each other and who might continue to work together after the training is something which needs to be borne in mind. But, whilst the use of external courses might be necessary for this reason at present, training to be really effective would, in the longer term, have to be conducted within departments.

- *Tutorial staff*

Although in some cases the use of "outside" tutors would be necessary, any longer-term planning would have to involve the development of departmental staff competent to direct the training. Very careful selection of tutorial staff would be essential and a considerable investment would be necessary in their training.

- *Risks to the individual*

Risks of adverse effects on individuals may be present particularly in training situations in which people explore and reveal more of themselves than they do on more orthodox training courses, but, although there is a possibility that training experience of this sort might precipitate ill effects of a "nervous" kind, no evidence has so far been found to support a correlation between attendance at group relations training activities and subsequent mental disorder. Nevertheless, since knowledge in this area is incomplete, further data will be sought with a view to ascertaining whether and/or what correlations exist. In the meantime, it is important that adequate safeguards should be provided in all cases involving experiential learning of inter-personal and inter-group processes.

Although a considerable amount of work has already been undertaken, at the present stage the Committee's views are necessarily tentative and it sees the need to develop further its own knowledge in the group relations training field. Immediate objectives include the study of forms of group relations training which appear to have the greatest potential for Civil Service use. In considering such forms, careful attention would need to be paid to the objectives that they are designed to meet. In this respect, whatever forms of group relations training might be undertaken, it is important that the relevance of them to the needs of individuals should also be clear to the officers taking part. The approach has been, and will continue to be, a cautious one. Two things are certain: there should be no indiscriminate use of group relations training methods, and each situation in which the possible use of group relations training is contemplated should be examined with the utmost care before any decision to use a particular, or any, group relations training method is made.

London Airport Cargo EDP Scheme

J. L. COLES, HM Customs & Excise

Background

London Heathrow Airport is one of the busiest in the world in terms of both passenger and freight movement. Twenty per cent of the country's imports and 17 per cent of exports, representing 370,000 tons of cargo per annum, pass through the airport and in a peak hour HM Customs & Excise may have to clear as many as 2,000 consignments of freight. This is the second highest figure in the UK for any seaport or airport.

It has been estimated that air cargo traffic at Heathrow is increasing at the rate of 12–14 per cent per annum, that is, doubling every six years. Such were the pressures exerted on Customs, the airlines and the forwarding agents that by 1966 it was felt that the airport would be unable to cope in the 1970s. Indeed, the point had already been reached where cargo flown across the Atlantic in six hours took up to five days to be cleared after landing. This situation was clearly unacceptable in an industry which justified its relatively high costs on the grounds of a high-speed, reliable service.

When goods arrived at Heathrow the airline would pass details to the forwarding agent who is responsible for clearing the goods through Customs. Clearance involved making a formal written entry and presenting it to Customs who manually checked the entry and decided whether the goods were required for examination. Once documents and goods had passed Customs examination and the airline was satisfied as to the agent's credit the goods were released. Finally, the airline presented the aircraft manifest to Customs who used an ADP system to check all entries received against these manifests to ensure that all goods landed had been properly entered. By the late 1960s, however, even the use of ADP was insufficient to absorb the increase in workload in this area.

It has been estimated that the documents required for Customs clearance alone would measure 16 ft. if laid end to end. Clearly, unless these clearance procedures could be accelerated the delays in releasing goods would grow, more cargo space would be required—a scarce and expensive commodity at Heathrow—and staff pressures would increase in an area where manpower was becoming increasingly difficult to recruit. In an attempt to speed up cargo throughput the entire cargo storage and handling facilities of the airport were concentrated into a 160-acre, £23 million cargo area opened in December 1968. Although this eased the problem, it clearly could not provide a permanent solution.

It was against this background, during 1966, that a Working Party consisting of Customs and airlines representatives explored the feasibility of creating an automated import cargo clearance system. In 1967 the forwarding agents began to participate in the scheme.

As a result, the computer-based system was conceived which subsequently became known as the London Airport Cargo EDP Scheme (LACES). In 1968 the Post Office's National Data Processing Service (NDPS) was invited to design and run a system to serve all users.

The project is now controlled by a Steering Group comprised of representatives from Customs, the airlines, the Institute of Freight Forwarders Ltd. (representing the agents) and NDPS. A combined team of Customs, airlines and NDPS systems analysts and programmers worked on the implementation of the system for more than three years. They were joined by ICL who, together with Cossor Electronics and Computer Sciences International, provided equipment and software support.

Live running began when KLM started operations on 23rd August 1971 and a phased cut-over of airlines was completed by 27th September 1971 when the system became fully operational and Britain became the first nation in the world to clear incoming air cargo by computer—at least two years ahead of any other country.

The System

LACES is a real-time system which carries out three main tasks: inventory control of all cargo arriving at Heathrow Airport; calculation of duties and taxes due on imports and the selection of goods and documents for Customs examination; calculating agents' daily accounts with Customs and producing statistical information.

At the heart of the system are two ICL 4/72 computers at the NDPS Centre at Harmondsworth, a few miles from Heathrow. One of these computers is used to perform the first two tasks using on-line techniques whilst the second, working off-line, is used for batch processing, program testing and standby purposes.

Users communicate with the central computer by means of *visual display units* (VDUs) situated in the freight area in airlines', agents' and Customs' offices and airlines' transit sheds.

Inventory procedure

Any consignment of freight arriving at Heathrow, whether for import or transhipment, is documented on an *air waybill* issued by the airline at the airport of despatch. Each air waybill is uniquely identified by an *air waybill prefix*, assigned to the airline, and an *air waybill number* assigned by the airline. When an airline receives an air waybill the information is keyed into the computer via the airline's VDU to create a "goods expected" record. This record is identified by a unique *common basic reference*, which is based on the air waybill number and identifies the consignment throughout its progress through the

airport. The input data includes the number of packages in the consignment and codes indicating the airline and the airport of origin.

When the goods covered by the air waybill arrive in the cargo shed the details of goods received and their storage location are keyed into the system via another VDU using the air waybill number as an identifier. The computer up-dates the entry file and when the total "goods arrived" equals the total "goods expected" the computer assigns *Status 1* to the consignment. If the goods arrive before the airline receives the air waybill, details of the goods received are fed into the computer to create a skeleton common basic reference file which is up-dated when the air waybill is received.

Before keying in the air waybill data the airline, by reference to its credit records, considers whether it is prepared to release the goods to the agent concerned and if satisfied assigns *Status 2* to the consignment. This is recorded in the computer system with the air waybill data.

To protect the revenue certain inventory information, once it has been accepted by the computer, can be amended only by Customs—for example, if the number of "packages expected" is required to be reduced.

By marshalling all of this information the computer is able to provide a constantly up-dated inventory control and print out discrepancy reports. Some of these are time-dependent, as for example, when Status 1 has not been achieved after a suitable interval from the input of the air waybill data.

Customs entry procedures

From the invoices and other commercial documents relating to the consignment the Customs agent, or the airline where it acts as an agent, prepares a coded *goods declaration*, or *Customs entry*, on the appropriate form. By pressing a key on the VDU the agent can call a format display of the blank form onto the screen. The operator then keys the coded information into the VDU when it is reproduced on the display. After a visual check the operator presses a send key which transmits the information to the computer.

On receiving the input data the computer performs a series of validity checks to detect omissions, inaccuracies, or incompatibilities. Inconsistent data, e.g. an invalid Purchase Tax classification or a claim for preference on duty free goods, is detected within two seconds and an error message is displayed on the VDU screen. The operator must then take corrective action as the computer will not continue to process the Customs entry until valid data is input.

Using the data accepted, the computer makes any necessary currency and quantity conversions, calculates the value for duty of the goods entered, determines the rates of duty and tax applicable and calculates the duty and tax due. Using a confidential Customs program the computer selects the goods for one of three channels of Customs examination. Details of the charges due and the examination channel

required are displayed on the VDU screen whence the agent copies them onto the coded Customs entry. The agent then signs the entry and presents it, together with the supporting documents, to Customs within a specified time from the keying in of the information. A record of the entry details is kept by the computer on the *Entry Record File.*

An agent may, if he wishes, make an *information Customs entry* via his visual display. This enables him, for instance, to ascertain the duty and tax which will be payable on a particular consignment, but will not give an indication of the channel of Customs examination which will be required. An information entry may be converted into a formal entry by depressing a single key on the VDU.

Customs examination

Using a selection program designed by Customs, the computer selects each entry for one of three examination channels:

Channel 1—for scrutiny of documentation only;
Channel 2—for scrutiny of documentation and physical examination of goods;
Channel 3—for automatic clearance after a *suspense period*, with limited scrutiny of documents and no physical examination.

Details of entries selected for Channel 1 clearance are printed out in the appropriate Customs office, together with the reasons for selection. Although details of the channel selected are available to agents and airlines the reasons for selection are revealed only to Customs. At this stage Customs may, if they wish, reselect the entry for Channel 2 clearance. If, however, this is not necessary and the documents are found to be in order Customs key in clearance which causes *Status 3* to be assigned to the consignment.

When goods are selected for Channel 2 examination, details are printed on character printers at the airline office so that goods may be made available for Customs examination. A similar advice, together with the reasons for selection, is presented in the Customs sub-office responsible for making the examination. The entry and supporting documents referring to the goods are transferred to the examination point and if the examining officer is satisfied Customs assign *Status 3* to the consignment by the input of a Customs clearance message.

Entries in Channel 3 are held for a *suspense period* during which time Customs may examine the details entered and redirect the entry to Channel 1 or 2 (or in the case of goods requiring immediate release, e.g. perishables, advance the clearance time). Any Channel 3 goods not re-allocated at the end of the suspense period are automatically given Customs clearance by the computer. Channel 1 and 2 consignments, however, cannot obtain clearance without a direct Customs input.

Within the framework of the selection program Customs may instruct the computer to select all entries which meet certain criteria, e.g. specific tariff classification, country of origin, importer, agent, etc.

Additionally, a percentage of all entries are selected for Customs control. The proportion of entries selected to each channel may be varied according to the volume of traffic, availability of manpower, etc. The Channel 3 suspense period may be similarly controlled.

Once the goods expected have arrived (*Status 1*), have been given airline clearance (*Status 2*) and Customs clearance (*Status 3*) a release note is automatically produced by character printer in the airline office.

Interrogating the system

One of the most valuable assets of the LACES system is the facility whereby any user can interrogate the system at any time via his VDU. By keying in the appropriate message the user can ascertain information on the progress of goods and documentation. An agent, for instance, may wish to know when a consignment is likely to be released or why it has been delayed so that he can remedy the fault or explain the position to the consignee.

Not all information, however, is available to all users. To preserve security each user has an identity badge which must be slotted into the keyboard of the VDU before a message is input. Thus each input message has a code associated with it which the computer checks against the message input. If the message is invalid for the badge type the computer rejects the input and a rejection response is displayed.

By this method both revenue and commercial security are maintained. Thus no agent or airline can obtain confidential Customs information, neither can an agent obtain, for instance, details of an entry made by another agent.

The interrogation facility has proved so valuable that there are on average 450 interrogations made per 100 simple air waybill inputs as opposed to the estimate of 40 interrogations per 100 inputs made when the system was being designed.

The logistics

Since going live LACES has operated at a very high level of reliability and has proved to be very simple to operate by the users concerned. As in all such systems, however, simplicity of operation can only be obtained after the most intricate and complex planning. In all, over 500 man-years were expended in the planning and development of the system. It is documented in over 6,000 pages of system specifications and 22,000 pages of program specifications. Over 250,000 separate computer instructions were written and over 1,500 people were trained by NDPS and Customs to use the system. The applications programs required about 100,000 lines of real-time code written in assembler language plus about 75,000 lines of Cobol for the off-line batch processing system. The control, testing and support software required an additional 95,000 lines of program codings.

To complete a computing system of the size and complexity of LACES in only two years, Computer Sciences International undertook

to launch a highly unusual project—simultaneous writing of the operating systems software with the applications programs. "Par for the course" is generally recognized as about three years and real-time systems of this size are often as much as 18 months to two years late.

LACES, however, was completed within one month of the target date set two years previously. In order to achieve this result CSI used a total team of, at times, up to 127 people from 16 countries including staff seconded from Customs, NDPS and ICL.

Development and equipment costs were in the region of £5 million and the total cost of the system over its planned life of nine years is currently estimated at about £17 million.

The benefits

Where then is the justification for this vast expenditure of capital and manpower? Since LACES was introduced the handling and clearance time for 1 in 5 of all consignments of goods imported into Britain has been halved. Customs entry procedures, which previously took 6–8 hours can now be completed in six seconds by the computer handling up to 16 transactions per second.

More important, perhaps, is the effect on staffing at the airport. Heathrow is a very difficult area in which to obtain manpower and the need for fresh staff was constantly increasing. LACES, however, has contained this increase to the extent that Customs have saved over 200 staff in the first year alone. The system is also capable of absorbing the huge increases in air cargo traffic likely over the next eight years. Additionally the inventory control system enables Customs to maintain a much closer, more accurate control over goods landed at the airport and to plot their course more efficiently.

The airlines, in addition to finding an immediate answer to their staffing problems, have benefited from the faster throughput of cargo. Sixty per cent of storage space at Heathrow has been saved (Pan Am alone estimate that LACES has increased the life of their cargo terminal by two years) and cargo is now far easier to control, thus reducing the risk of damage or pilferage. These benefits have enabled the airlines to contain the ever-increasing costs of air freight to the ultimate benefit of trade in general.

The agents too have found that they can now offer a much more efficient and speedy service and that entry clerks, ever at a premium, can now be used to their full capacity.

Perhaps most important of all are the benefits to trade in general. Air freight costs have been reduced, cargo is delivered much more quickly and efficiently and the interrogation facility has made it possible for airlines and agents to give consignees immediate information about the progress of their cargo through the airport.

The future

LACES is a highly flexible system and, although at present limited to

imports, an outline of a possible export system has been formulated and could be implemented within the next two years. From 1st January 1973 the Customs accounting system has been modified to provide for the deferment of duty payments as required by the EEC. The system produces a direct debit tape for transfer to the Bankers Automated Clearing Services Ltd. A further phase under investigation will provide accounting and direct debit facilities for airlines and agents.

In due course the system is likely to be extended to other major UK airports and the possibility of applying the technique, although not necessarily the same system, to seaports and container depots is under consideration.

On an international level, direct transmission of air waybill information from abroad is possible by the mid-1970s and the possibility of direct input of Customs data from abroad is also being contemplated. Similar systems are under development in France, Germany and America and it is possible that by the late 1970s direct system-to-system communication will be established.

Whatever the future may hold, LACES represents a major breakthrough in Customs techniques, and has undoubtedly set a pattern for future Customs work.

A view of the range of binders containing the present 35-volume LACES system specification is shown at the centre pages.—EDITOR.

New Office Equipment

This section contains a description of new items of office machinery and equipment. Inclusion of any particular item is not to be regarded as an official recommendation nor as indicating that it will necessarily be available to Government Departments.

BELL & HOWELL "BRIEFCASE" MICROFICHE READER

Marketed by Bell & Howell Limited,
26 York Street, Twickenham, Middlesex

The "Briefcase", which is illustrated at the centre pages, is a portable microfiche reader. The dimensions of the collapsed reader—the control housing telescopes into the screen compartment when the reader is not in use—are $3\frac{1}{2}$ in. × $9\frac{3}{8}$ in. × $10\frac{1}{2}$ in. Dimensions open are $6\frac{1}{4}$ in. × $9\frac{3}{8}$ in. × $10\frac{1}{2}$ in. Weight is 5 lb. The Fresnel-type screen is 9 in. × $6\frac{5}{8}$ in. and its optical efficiency allows projection of a good quality image using a 12 V car bulb light source. The reader does not require fan cooling, and is silent running. Image magnification is 20× with no options available.

The reader accepts all standard microfiche formats and jackets. The fiche is inserted into the reader, and vertical and horizontal movement is under knurled thumbwheel control. Frame location is achieved by use of rotating disc indicators showing row and column positions. The indicators have dual markings enabling location on both 24: 1 and 48: 1 formats. Image rotation is effected by turning the reader.

The reader can be operated from a car circuit by using an optional adapter cable.

List price £45

MICRO-SCAN SYSTEMS K-100 ESCORT MICROFICHE READER

Marketed by Caps Microfilm Limited,
7 Westmorland Road, Kingsbury, London NW9 9RG

The Escort is another portable reader. Dimensions are $10\frac{1}{2}$ in. × 11 in. × $5\frac{3}{4}$ in. with a weight of approximately 5 lb. The high luminance $7\frac{1}{4}$ in. × 10 in. screen projects a good quality image at 20 or 24 magnifications; other magnifications up to 75× are available on special order.

The reader will accept all standard microfiche formats and film jackets. After insertion of the fiche into the reader, guide rollers under thumbwheel control govern horizontal and vertical movement. Frame location co-ordinates are available to suit any format and consist of interchangeable frame-numbered, plastic carriers linked to permanent

row markings on the fiche slot. Image rotation is obtained by turning the reader.

Adaptation to use from car circuit or battery power sources is an optional extra.

Further information about the reader, which is illustrated at the centre pages, and details of price may be obtained from the company.

3M "700" READER/READER PRINTER

Marketed by 3M Company Limited,
3M House, Wigmore Street, London W1 1ET

This equipment embodies facilities, in the form of interchangeable clip-on units, for handling 3M cartridges, open spool roll film (16 or 35 mm), microfiche and jackets. Each unit can be operator changed.

The basic unit is mounted on a metal frame; screen size is 12 in. × 15 in. and is COM compatible. A range of interchangeable lenses—20×, 24×, 42× and 48×—is available. The cartridge attachment has motorized drive linked with the familiar 3M odometer for indexing and retrieval. A prismatic lens offers 180° image rotation.

Conversion to Reader Printer is effected by the addition (engineer fitted) of a print module. This produces a $7\frac{3}{4}$ in. × $10\frac{3}{4}$ in. print using the dry silver process. No toners or powders are involved. Print-out cycle time is about 30 secs. at a cost of approximately 5·25p per print. Paper is supplied in boxed sheet form.

Dimensions of the "700", which is illustrated at the centre pages, are: height $23\frac{1}{2}$ in.; width 19 in.; and depth (Reader Printer) 25 in., (Reader) 21 in. Weight is 75 lb.

Further information and details of price may be obtained from the company.

KODAK EKTALITE MICROFICHE READER

Marketed by Kodak Limited,
Station Road, Hemel Hempstead, Herts

The Ektalite is a portable reader employing the benefits of front projection optics with the constructional convenience of back projections machines.

A feature of the reader, which is illustrated at the centre pages, is the extremely high contrast screen image. This has been achieved by use of a highly reflective screen material—Ektalite—developed originally by the company for applications in another sphere of its operations. A blue filter mounted between the screen and the user reduces image brilliance to a comfortable level and lessens the effects of extraneous light. The light source is a standard 12 V car bulb giving longer lamp life and eliminating the need for fan cooling. Models are available with either a 20× (Ektalite 120) or 40× (Ektalite 140) lens.

The reader will handle all standard microfiche formats and film jackets. Movement of the fiche after placement in the reader, along both vertical and horizontal axes, is effected at the same control point. Paper guides, corresponding to column and row co-ordinates, can easily be fitted to achieve frame location with any format.

The curved screen is $5\frac{3}{4}$ in. × $7\frac{3}{4}$ in., the greater dimension being its width. At standard filming reduction ratios some vertical scanning is required to read the whole image. Elevation control offers a selection of 10 different viewing angles.

Dimensions are: height 13 in.; width 8 in.; and depth 11 in. Weight is 5 lb.

Further information and details of price may be obtained from the company.

REMOTECOPIER FACSIMILE TRANSMISSION

Marketed by Plessey Communication Systems Limited,
Tolworth Rise, Surbiton, Surrey

The Remotecopier is a desk-top facsimile transmission machine based on one unit for both sending and receiving documents. It operates over public or private lines and uses an electrostatic printing process to produce dry copy. An A4-size document is received in about six minutes.

Each unit contains a continuous roll of paper 270 ft. in length enabling up to 270 A4-size documents to be received. The machine will transmit or receive any original up to a maximum size of $8\frac{1}{2}$ in. × $14\frac{1}{2}$ in. Dimensions of the Remotecopier, which is illustrated at the centre pages, are: height 12 in.; depth 20 in.; and width $25\frac{1}{2}$ in.

Further information may be obtained from the company.

Purchase price £985; rental, £36 per month for 3 years

EDITOR S14 ELECTRONIC AUTOMATIC TYPEWRITER

Marketed by British Olivetti Limited,
Whitfield House, 6–10 Whitfield Street, London W1P 6BX

The Editor S14, which is illustrated at the centre pages, is an automatic typewriter designed for repetitive typing, fast retrieval, justification and other systems work. It consists of an Editor 4 or 4C typewriter, a magnetic tape loop memory and a central processing control unit. The typewriter is a standard machine with a carriage length of about 13 in. and pica or elite typeface. The magnetic tape is contained in a cartridge, which is interchangeable; the tape is 40 ft. in length with a capacity store of about 250,000 characters held in 14 tracks plus 2 tracks for program. The memory storage of 1,024 characters allows

fixed data in the form of programs for different systems. All instructions for, e.g. formats, righthand margin, edit, corrections, etc., are held in the machine.

Whatever is first typed on the keyboard the text is recorded on the memory tape, the free zone being located automatically. The system numbers each text and the lines of each text, so that the typist can locate any part of the information. The print-out speed is 14·5 characters per second.

Approximate dimensions are: width 48 in.; height 36 in.; and depth 27 in. Weight is about 263 lb.

List price £3,900 including one cartridge;
magnetic tape cartridge £50

RECORDAK RELIANT 700 MICROFILM CAMERA AND RECORDAK INSTAMATIC PROCESSOR

Marketed by Kodak Limited,
Station Road, Hemel Hempstead, Herts

The 700 camera offers all the facilities of its predecessor, the 600K, with additional new items. An integral instamatic processor is an optional extra.

The 700 camera provides high-speed, high-volume filming of documents up to A4-size (throat width 12 in.). The automatic feed unit achieves document separation and double feed detection. New cheque feeder and stacker accessories allow continuous feeding of documents (no fanning required).

Separate film units provide for filming at reduction ratios of 24: 1, 32: 1, 40: 1 and 50: 1. Filming can be in simplex, duplex or duo formats. Different film units, available in the same range of reduction ratios, are necessary for use with instamatic film. Conventional film units accept standard 100 ft. spools of film or thin based Datapak (215 ft.), and embody a semi-automatic threading facility. Instamatic units only accept cartridges of thin based instamatic film (Type 3453—215 ft.); loading and threading is automatic. Image count sensing marks (blips) can be applied using a point light source via fibre optics.

Other features and accessories include: an imprinter by which documents can be sequentially numbered; document counter; pre-select exposure control; cheque endorser; hand-feed shelf and work station.

The instamatic processor can be mounted alongside the 700 camera, and processing carried out *in situ* in normal office lighting conditions. Processing speed is 5 ft. per minute. It is cartridge loaded—thin based film Type 3453 (215 ft.)—self-threading and completely automatic. A monobath processing system is employed using pre-packed solutions (Chempak). No plumbing is required. Processed film is washed to "Commercial" standards and archival quality is not claimed.

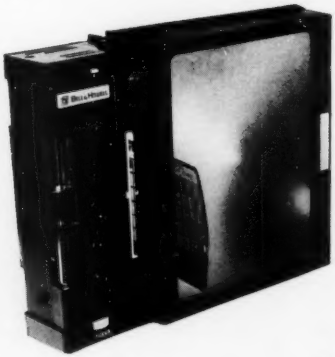
BEFORE: Some of the 120,000 files previously used for record-keeping at the BSO, and AFTER: Some of the Carter Parratt units which have made the files unnecessary. Altogether, 40 posts were saved. **See article on page 31**

A The range of binders containing the present 35-volume LACES system specification—the original 1966 specification occupied one slim booklet. See article on page 18. (Reproduced by kind permission of The Post Office.)

B Remotecopier Facsimile Transmission
C Redactron Automatic Typewriter
D Kodak Ektalite Microfiche Reader
E 3M "700" Reader/Reader Printer
F Geha Automat 2000 SR Offset Litho Duplicator
G Anita 1233P Electronic Three-store Calculator
H Bell & Howell "Briefcase" Microfiche Reader
I Editor S14 Electronic Automatic Typewriter
J Micro-Scan Systems K-100 Escort Microfiche Reader

D

G



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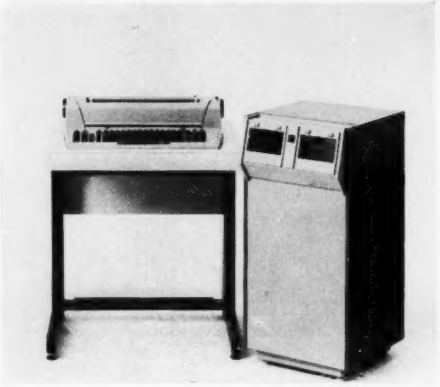

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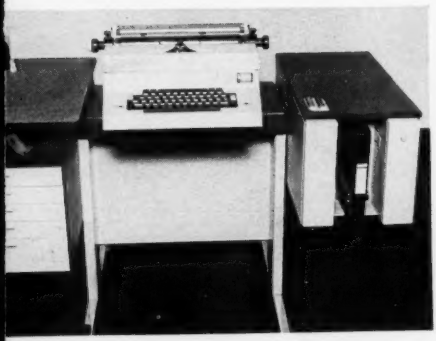

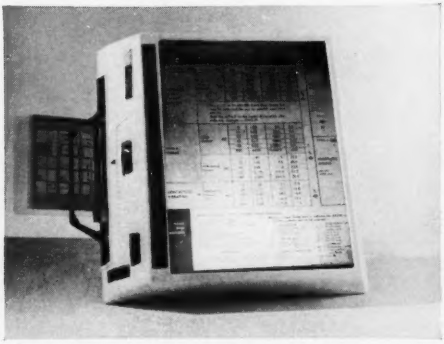

J

A view of some of the various photocopying machines held in the HMSO demonstration rooms, and (below) some of the offset litho machines, and stencil and spirit duplicators—see article on page 39

Further information about the camera, its accessories and the processor may be obtained from the company.

List prices: Basic camera unit £1,380; film unit £555; auto-feed £320; processor £1,550; cabinet £125

ANITA 1233P ELECTRONIC THREE-STORE CALCULATOR

Marketed by Sumlock Comptometer Limited,
Anita House, Rockingham Road, Uxbridge, Middlesex

The Anita 1233P three-store calculator with print-out facility has recently been introduced by Sumlock Comptometer. The machine has three accumulating stores, which can also hold constants, and a separate constant memory. The three stores can be added to, or subtracted from, by direct entry or automatically on completion of calculations. Latching keys provide for automatic sums of results, sums of first numbers and item count, so that the machine can be used for standard deviation, averaging calculations or multiple exchange rate conversions. Extra key features include automatic square root, change sign which permits negative entry, interchange key, fully floating decimal point and automatic rounding up to six places of decimals. Round-off, round-up or truncate apply to final results only.

Further information about the 1233P, which is illustrated at the centre pages, may be obtained from the company.

List price £350

GEHA AUTOMAT 2000 SR

Marketed by Geha Graphics Limited,
33 New Cavendish Street, London W1M 7RL

The Automat 2000 SR is a desk-top offset litho duplicator designed to handle electrostatic masters direct from the copying machine for short run copies. It is fully automatic with push-button control. It will etch, ink, clean blanket and stop automatically. It has two copy counters, a 4-digit resettable count-down from 9999 to 0 and a systems repeater dial for up to 100 prints. The feed tray will hold up to 1,000 sheets with a maximum paper size of 9½ in. × 13 in. and a maximum print area of 10½ in. × 15 in. The Automat, which is illustrated at the centre pages, has variable speeds from 3,000 to 6,000 prints per hour. If a colour change is required, the whole inking unit can be removed and replaced by another.

Dimensions are: width 24 in.; depth 20 in.; and height 20 in. Weight is 220 lb.

List price £1,150

REDACTRON AUTOMATIC TYPEWRITERS

Marketed by Business Data Products Limited,
Acorn House, 314–20 Gray's Inn Road, London WC1 8PX

Two new items have been introduced by BDP: a cassette magnetic tape automatic typewriter and a one- or two-station magnetic card automatic typewriter.

The magnetic tape machine uses the solid state IBM golf ball typewriter and magnetic tape held in cassettes. The cassettes will hold about 70,000 characters, and speed of search is 1,500 characters per second. The machine has a carriage length of 15½ in. and a print speed of 15 characters per second. Edit features are incorporated, and include: backspace by character, word or line; skip or print of character, word, line and paragraph. Other features include: program search; reverse search; a 99-position reference code; and a buffer store of 160 characters. This equipment is available as either a one- or two-station, and all models have automatic tabulation setting and underscoring by code.

The magnetic card machines differ only in the media used, i.e. cards of about 3 in. × 8 in. giving 64 lines and which may contain up to 10,250 characters.

List prices: single card/magnetic tape machine £3,000; dual card/magnetic tape machine £3,600

RICOPY HI-START 4 DYELINE COPIER

Marketed by Block & Anderson Limited,
Banda House, Cambridge Grove, London W6 0LE

A recent dyeline copier introduced into this country is the Ricopy Hi-Start 4. This machine utilizes the semi-dry process. It will accept originals up to 17 in. in width. No warm-up period is necessary.

There is automatic separation of copy from original in a newly patented device—the "Rotary Guide System". Manual separation is also possible.

Copies are front-delivered. Light source is four 80 W. fluorescent UVH lamps, which are claimed to have double the life span of conventional bulbs.

Dimensions of the machines are: width 29 in.; height 10 in.; and depth 17 in. Weight is 99 lb.

List price £330

Is your filing really necessary?

R. A. PURSER, Department of Trade and Industry

Office workers today know that files can take many different forms including, for example, a reel of computer tape. But the picture which springs to mind when the word "file" is mentioned is still very likely to be a manila cover, usually with a number and title on the front, containing a collection of papers attached to it by some kind of tag, emanating from a mysterious room down the corridor labelled "Registry" or "File Store".

Until recently, the Business Statistics Office (BSO) had 120,000 files of just this kind, serviced by a registry of over 20 staff, and a dinosaur of a paper-handling system which managed to survive whilst the office was evolving its way through three generations of computer. This is the story of what happened to them.

The BSO itself was created in January 1969, from the earlier Census Office of the then Board of Trade, in order to centralize Government collection and dissemination of business statistics in one office. On the production statistics side, the foundation for its operations is an ADP-based list or "register" of about 150,000 production establishments which mutually serves the BSO and the Department of Employment. This register enables the BSO to make the inquiries necessary for the collection and compilation of comprehensive and accurate business statistics, and its prompt and efficient up-dating is vital. Long-term plans are likely to affect the register substantially in due course, and may justify new equipment and different up-dating methods.

But in the meantime, BSO had to continue to operate using its existing paper-handling system which had originated many years ago with a smaller register. At the same time the staff concerned were confronted with demands from other parts of the office to up-date the register even more quickly in order to meet the needs of the changing pattern of statistical activity, which was tending more and more towards smaller but more frequent inquiries. In addition, the office itself was faced with all the upheaval of a dispersal move from a London suburb to Newport (Mon.) and a massive training problem.

In these circumstances, BSO decided to try for an interim solution to its filing problem and it invited the Board of Trade (subsequently Department of Trade and Industry) Management Services Branch to "review the paper-keeping organization in the light of future developments of the office". Management Services were given freedom to interpret the terms of reference widely, always a good thing when

examining paper-keeping because it really cannot be considered adequately in isolation from paper-handling.

The process of up-dating the register is, in fact, very much less straightforward than might at first appear. Not only does the information come from a variety of sources, in a variety of different ways, but it can seldom be acted upon in its raw state. An apparently innocuous change of name often cloaks a takeover, or the creation of a new company; and an apparently new production establishment address sometimes proves to be no more than a dispersed office housing the accounts section. Thus, before converting new information into an ADP punching instruction, its validity must first be checked. It must also be compared with the existing register entry, and with any recent changes to that entry, so as to guard against inadvertently turning the clock back. The collection of statistical information is not always particularly popular, and a faulty address register can harm the best of relationships and also create mounds of unnecessary work.

In order to handle the paper associated with this work, the BSO maintained about 120,000 traditional paper files, one for each of the 100,000 independent production establishments on the register, and about 20,000 others covering those production establishments linked within companies in various groupings. New files were being added at a spanking rate of 10,000 a year.

Authority for amending the register was (and is) vested in a Register Section, which employed over 100 staff on the work when the assignment began. A separate registry, operated as a common service, was responsible for opening, closing, storing, and recording movements of the files, and for up-dating a hand-written record of the register entry within them. The job of the Register Section was to get the file, verify the piece of information, prepare an ADP punching instruction, file the papers, and minute the file to the registry stating what changes were required to the record on the file. These minutes were sometimes several pages long, and since they often called for a production establishment address to be transferred from one company or group to another both files were minuted separately. There was no timed closure policy and a massive weeding problem had already loomed. It was common to find files several inches thick, and the registry staff constructed special spines for many of them using plastic tape. It was all so depressing when one remembered the computer and its sophisticated peripherals just a few rooms away.

The Register Section was at the time organized in sub-sections so that each actioned amendment information coming from a particular source. While this made paper flow inwards straightforward, each clerk was processing information which might affect any part of the register. With the basic visible record so mobile, in the shape of a file, this was quite feasible. In fact, it was a situation that one frequently comes across where files are controlled by a "common service" registry outside the responsibility of the main user section, which itself is organized

with apparent disregard of the effort needed to move the files around.

Detailed fact-finding showed that a lot of effort was being dissipated in requisitioning, booking and searching for files; becoming familiar with complex production establishment linkage arrangements made by others; in writing minutes; and, I suppose inevitably, in staff checking back on the work of their predecessors to see whether a piece of earlier information had been interpreted and acted upon correctly. The usual "registry" enemies were there: inability to trace files, local unofficial transit records and indexes, and file hoarding ("While it's in my cupboard, I know it can't get lost!"). Hundreds of files were accumulating in rooms where backlogs had developed. A string diagram of staff movements would have looked like a cat's cradle.

We sought a "steam" O and M solution which could be introduced quickly and would meet BSO's needs for the next few years. Although ostensibly we were examining paper-keeping, we concluded that the key to the problem lay in the way the Register Section itself was organized. Until that changed, the basic record had to be in a highly mobile form and the paper-chase would continue. The advantages of the existing organization (paper-flow inwards, familiarity with information from one source) were by now far outweighed by the trouble it was creating (file chasing, loss of familiarity with complex cases, and checking of previous actions), and line management agreed, therefore, to reorganize the section so that each clerk became personally responsible for all amendments from whatever source to a numerical block of companies and independent factories. Although more mail sorting was necessary, a better balance between sub-sections proved possible and when the organization settled down about 20 posts, mostly support CAs, were saved.

There was now no longer a need for the highly mobile record. Instead, we were able to recommend a vertical visible index system to be kept in the Register Section itself in which the record cards, about 175,000 of them—one for each production establishment, company and group within the company—took the place of the record previously maintained by the registry on the file. These were housed in 84 Carter Parratt Visirecord units, half of them "Speedpost" units with table attached to provide working space. Now, when the Register Section clerks receive a potential amendment, they are able to check validity against the records alongside them, prepare the punching instruction, amend the record card to match, and enter on a separate smaller history card placed in front of the record card the historical data, such as source, date and reason for change. Transfers of production establishment records between and within companies are achieved by simply moving the card and booking the movement on the parent card. Periodically, an ADP listing identifies cards which are to be removed because the establishments have closed down. Swivel chairs, domestic lockers and colour-coded six-tray trolleys, to hold types of paper and a telephone, have been added to assist the work. Morale is now much

higher because, firstly, there is the spur of personal responsibility and pride and, secondly, there is a recognition that money has been spent on improving the clerical work instead of only (as the impression went) the ADP facilities.

And what of the paper itself? Very little of that previously kept in the timeless files was worth keeping for long. With the new system, the Register Section clerk stores it near at hand in "month" box files in date-actioned order ready for destruction 12 months hence. Trace of the basic information, if required, is by date of action, obtained from the history card. Thus, each clerk now has complete personal responsibility for his own block of the register, records and attendant paper. The registry has been disbanded. The old files are to be destroyed, except for a few relating to the larger companies which are being retained for a short while for historical purposes. About 20 posts, mostly those in the registry, were saved during this stage of the exercise.

Conversion to the new system would have presented a major headache, but this time we were in luck. As the register itself was ADP-based, the record cards could be printed, already sorted, on continuous fan-fold stationery. The fan-fold stationery itself was of three types in 1,000-card lengths, contained in 200 boxes. The cards had to be burst and trimmed, and transported from Newport (where the computer was) to Eastcote (where the Register Section was), providing a substantial house-keeping problem. Some useful devices were used, such as the insertion of a straight sequential number at the foot of each card to control the job.

For a number of extraneous reasons, the bulk of the conversion work had to be done within a critical four-month period at the same time as many staff movements were taking place. Dozens of people became involved—Accommodation, ADP, manufacturers, in addition to DTI and BSO MS and the Register Section. We formed ourselves into a working party and made sure we met enough times to take stock of what had got to be done, by whom, and by what time.

The project proved to be a model of co-operation and underlined the value of the MS team working alongside line management to the bitter end of conversion. By so doing, the MS man is more appreciative of the nasty little problems which bedevil the line manager when converting theory into practice, keeps his hand in at improvization, and eases the path by "knowing the right people" at a critical time. Overall, the job took about two years, including 18 months considering and implementing the report. During this time, the BSO had formed its own MS unit, based on Newport, which took over co-ordination and ADP collaboration.

Altogether the number of executive, clerical and paper-keeping posts saved exceeded 40, aggregating to about £60,000 per year in average salary costs. Total assignment costs, including hardware, computer programming, conversion work, MS time and all, was around £24,000.

To simplify presentation, many complications have been omitted from this article and the problem at the BSO was not nearly so straightforward as has been implied. But even so, how is it that such a situation could arise? In my experience, the case of the BSO was not unique. This kind of problem does not appear suddenly: it is like a bindweed which climbs around the family tree of the organization until it begins to strangle it. Perhaps it is sometimes too easy to transfer out-of-use paper to someone else's responsibility. Without this facility, something would have to be done about sorting out the unwanted much sooner, instead of leaving a massive problem for our successors (as many a Departmental Record Officer has discovered when seeking an action officer prepared to sanction the despatch of old files to the shredding machine).

Are our registry organizations a little too eager to invite into their capacious stores a lot of paper which will soon be rubbish? Could it be that we should be encouraging registries to turn away business of the type described in this article—those long straightforward runs of case and nominal files—where branch procedures and standard registry practices overlap and often conflict? The existence of organizational barriers between registry and unit served obscures the true effort involved; often one encounters reluctance by both main parties to change, the registry organization insisting on providing a Rolls-Royce service where a Mini would do, and the unit served gratefully accepting a hidden subsidy on the cost of doing its job.

Provided delegation is controlled, registrars could be relieved of the physical day-to-day control of such paper and, instead, concentrate on offering specialized knowledge on filing systems in the broadest possible sense. Their own registries could then be employed more on controlling papers of lasting importance and those less easily indexed.

"*Before and after*" *views of the record keeping system at the Business Statistics Office are shown opposite page* 28.—EDITOR.

Systems Design—with Microcopying in Mind

B. J. TERRY and P. V. WOOD, Civil Service Department

The authors of the article which follows are in the Specialist Subjects Branch of Management Services (General) Division, CSD, and are concerned with microcopying systems. The article was first published in the *NRCd Bulletin* (Volume 5, Number 4) and is reproduced by kind permission of the Editor.—*Editor.*

With a title as vague as this the reader can be forgiven for expecting an abundance of generalities and he will not be disappointed—applications of microcopying cover such a diverse range of subjects it is difficult if not impossible to be specific. In mitigation we can only say that the generalities have been inserted with malice aforethought as a result of long and sometimes bitter experience in this field.

The design of a system incorporating, or perhaps even largely dependent on, microcopying techniques will, of course, need to follow the basic rules of systems analysis, i.e. collection of facts, evaluation, formulating proposals, etc. In addition, however, some special considerations will apply because the initial output of the system will, by definition, be unreadable with the naked eye and the processes involved may well be unfamiliar to the user. These special considerations will be ignored at peril, but nevertheless should not be allowed to dictate to the system—microcopying should be tailored to fit the overall system, not vice versa.

At present—and for the foreseeable future—microcopying systems must to a large extent be hardware restricted in that they will need to be designed within the parameters set by currently available equipment.

A word of warning—microcopying hardware does *not* constitute in itself a "system" although some advertising literature may give this impression. Complete adoption of a proprietary package "system" often produces only a hardware dominated strait-jacket and results in the "bucket" approach to the application—the users' requirements being thrown into the "bucket" and then severely trampled upon until an approximate fit is obtained!

It follows, therefore, that a basic knowledge is required, at an early stage, of microforms, the techniques involved in their selection, duplication and retrieval, and of the range of equipment available. This can best be acquired by short introductory microcopying courses, for example, NRCd's three-day Micrographics course or Microforms in Libraries course. Failing this, advice and assistance can be obtained from micrographic companies—with the proviso that the seeker after wisdom accepts the obvious bias towards the company's own products.

The amount of non-technical literature on the subject of micro-

copying is not large for such a developing subject, but there are short booklets issued by the British Standards Institution, micrographic companies and consultants. Members of NRCd can obtain details of publications suited to their particular field of interest using the "token system" provided for subscribers.

Now suitably equipped to approach the application, there will be four main areas of a proposed microcopying system requiring study in depth:

(1) Selection of the microform—usually a decision between roll film and one of the unitized forms (microfiche, jackets or aperture cards).
(2) Filming—recording the data base onto microfilm by conventional cameras or even COM (Computer Output Microfilming).
(3) Processing and duplicating the microfilm.
(4) Retrieval, reading and (where essential) print-out.

One approach to the study of these areas which has proved effective in our organization is that of using the answers to a series of basic questions to eliminate alternatives and thus to provide the parameters for a possible microcopying system, and at the same time reduce the range of microcopying techniques and processes requiring detailed investigation for the application in mind. It is essential at this stage to keep an open mind and be prepared to backtrack on the questions if an impasse is reached—there is always the temptation to "bend" the user requirements on such occasions.

The following set of questions is by no means exhaustive or even comprehensive and is aimed at active business systems requirements rather than the more passive library or archival type systems requirements; however, it may serve as a basis for other types of applications.

1. *Selecting the microform*

(*a*) What is the unit of information in the system? Is the material in a continuous series or in discrete blocks—of what size?
(*b*) Is there a requirement for up-dating, interfiling, re-sorting the input material?
(*c*) What is the distribution—is the whole range of material disseminated or only parts—systematically or on demand?

2. *Filming*

(*a*) Is the quality of the document good, or if not can it be altered or has its size and layout been predetermined?
(*b*) Is it coloured, single sided, double sided, in files or loose sheets, in good or bad condition, large or small, paper or card?
(*c*) What are the volumes involved and the time scale available for filming?
(*d*) Is there a large backlog of material—must it be filmed at all, must the filming be carried out in-house?

(*e*) Must the film be checked 100 per cent or will a sample check suffice?
(*f*) Are the documents in a logical order already or is there a need for re-sorting?
(*g*) Is there a need for retrieval aids to be inserted at the filming stage?

3. *Processing, etc.*

(*a*) Does the nature of the task or the time scale require in-house processing?
(*b*) Is there a real need for processing to archival standards?
(*c*) Does the system require positive or negative reading film—does it matter?
(*d*) Can the camera film be used for retrieval purposes or must there be copies of the film—how many—how quickly after filming are they required?

4. *Retrieval, etc.*

(*a*) What is the realistic rate of retrieval required—how fast must the retrieval be?
(*b*) Will the "retriever" be the same individual all the time or operated by casual users?
(*c*) Must the retrieval be aided by mechanical means—how complex *must* it be?
(*d*) Is the retrieval one stage (direct to microfilm frame) or is a separate index required—perhaps on a microform?
(*e*) How many user points will require viewing equipment—how sophisticated must it be?
(*f*) Must the image be viewed at original size, or will a reduced size image be acceptable?
(*g*) Can the retrieval be achieved by reading from the screen or is a print-out essential—can it be of reduced size?

Applying the answers to these questions to the knowledge of basic micrographics obtained by study of the subject (or alternatively locating tame experts to provide the knowledge!) should provide at least the outlines of a microcopying system.

In conclusion, we will leave you with four more generalities:

(1) Facts on the volume of material to be filmed and the subsequent rates of retrieval are required and not opinions.
(2) Ensure that "desirable" is not confused with "essential".
(3) Microcopying is no panacea for a badly indexed or structured paper system—conversion to microfilm will merely render the documents unreadable as well as unfindable.
(4) If the object of the exercise is to save money by removing mounds of paper remember that microcopying is not a viable substitute for a wheelbarrow and an incinerator.

HMSO Reprographic Demonstration Rooms

The August 1972 edition of the *O & M Bulletin* included an article describing the work of the CSD office machines and equipment demonstration rooms in Old Admiralty Building. It ended with a reference to the companion suite run by HMSO. As a result of that article there have been a number of enquiries and visits to both suites from both central and local Government staff, and enquiries from organizations in the private sector. Several have suggested that further information about the HMSO rooms would be of value. Hence this article.

HMSO moved their demonstration rooms from Sanctuary Buildings, Great Smith Street, to Old Admiralty Building in August 1971. The greater space made available afforded the opportunity to increase the number of pieces of equipment for demonstration. At the same time, the new suite of rooms provided brighter and more comfortable surroundings. The rooms, which are staffed by members of the Co-ordination of Reprographic Services (CRS) section of HMSO, display equipment covering the whole field of reprography, including:

Addressing machinery;
Automatic typewriters (paper tape and magnetic tape);
Cold type composers;
Electric typewriters;
Photoprinting equipment (diazo, dual spectrum, electrostatic, thermographic, xerographic);
Microcopying equipment (flow camera, planetary camera, readers, reader/printers);
Overhead projectors;
Spirit and stencil duplicators;
Small offset lithographic machines (table-top and console);
Plate making equipment; and
Warehouse finishing equipment (gathering machines, guillotine, comb binder).

The bulk of this equipment, some £70,000 worth, is loaned by manufacturers and agents.

There are a number of "preferred machines" on show. These machines have a proven record of reliability and quality, and represent the best value for money for HM Government within their range. They can be ordered by departments directly on HMSO Supplies Division, Norwich, always providing that the demands are countersigned by the departmental O and M officer. For machines not on the "Preferred List", departments should consult on the appropriate equipment.

The main function of the demonstration rooms is to provide a

lecturing and advisory service. A great many courses, run by the Civil Service College for O and M students, spend a day, or part of a day, in the rooms. Similar courses run by such organizations as the Royal Institute of Public Administration, various polytechnics and technical colleges, and certain universities, also make use of the facilities. The sessions may be devoted to introducing just one or two particular processes, or may take in a tour of the entire range. The role that CRS play in the selection and provision of reprographic equipment and, where necessary, the CRS method of evaluating machinery, including the "cost per copy" principle, is fully explained.

As one might expect, the rooms are visited frequently by O and M staff actively engaged on cases involving the introduction or enlargement of reprographic units. They might be seeking a more detailed understanding of how a particular piece of machinery operates; or seeking advice on some other aspect; or they might have a particular problem which they wish to discuss. The service offered is quite comprehensive.

In addition to the service provided by the demonstration rooms, CRS also provide specialist advice from casework officers, each of whom deals with a narrower field of equipment, for example, microcopying. Where such specialist advice is sought, staff of the demonstration rooms would be pleased to put enquirers in touch with the appropriate casework officer.

One of the obvious advantages of the HMSO demonstration rooms is the absence of any "hard sell" technique, enabling a far more objective view, based on experience of performance and cost, to be obtained.

Enquiries about the use of the rooms, for lectures or demonstrations, consultations or advice, are welcome and should be made to Mr. F. J. Meads, HMSO Demonstration Rooms, SG/11, Old Admiralty Building, London SW1A 2AZ (Telephone 01-839 7733, extension 1559).

Views of two of the rooms in the HMSO suite in Old Admiralty Building are shown opposite page 29.—EDITOR.

Staff Suggestions Schemes

F. L. KILLEEN, Civil Service Department

Mr. Killeen is in the Management Services (General) Division of CSD, and his duties include Secretaryship of the Standing Conference of Chairmen of Departmental Staff Suggestions Schemes.—*Editor.*

Many organizations, particularly industrial companies, operate suggestions schemes, and claim that they save considerable sums of money. However, these savings are rarely disclosed, possibly because their full extent is often not calculable without undue effort. Some would claim that a further benefit of these schemes is that they are helpful in maintaining good staff relations.

There have been staff suggestions schemes in the Civil Service since the early days of the century and nowadays all the major departments, and many of the smaller ones, operate them. CSD have records of a total of 50 schemes covering over a million staff, including the Armed Services.

It is a generally recognized principle that staff suggestions schemes will only work satisfactorily within an acknowledged framework. Most schemes in the Civil Service operate on at least a semi-formal basis deriving from agreement at Departmental Whitley Council level. A model scheme was promulgated by Treasury in 1966 and most departments have adopted it. The scheme has recently been reviewed and modified to take account of minor shortcomings revealed in use and to make it somewhat more flexible.

The model outlines a procedure for dealing with suggestions and includes examples of the subjects on which suggestions would be welcomed. It also embodies an awards structure in which suggestions are categorized as qualifying for nominal, moderate, or substantial awards, with cut off figures at departmental level of £10, £25 and £100 respectively. Awards of over £100 may be made on CSD authority, which is regularly sought. Awards cannot, of course, be paid for suggestions which it is the duty of the suggestor to make.

The procedure recommended in the model presumes the existence of a committee, consisting of Official and Staff Side members acting in their individual capacities and serviced and advised by a secretary. Suggestors are anonymous at least until after the decision stage. The committee supervises the scheme, assesses the suggestions and recommends awards. For assistance in investigations, it normally looks to the division whose work is affected by the suggestion, and if necessary, advice in assessing and rewarding technical suggestions may be obtained from a Ministry of Defence committee—the Committee on Awards to Inventors. Awards are authorized by the Establishment Officer, who may delegate his authority as he thinks fit.

In order to promote parity of treatment of suggestions in different departments, a Standing Conference of Chairmen of Departmental Staff Suggestions Schemes has been set up. This meets annually to review progress and to identify areas requiring study. Working Groups have been formed to report to the Conference on publicity, the use of non-cash awards, and on policy on award assessment. The two first-mentioned groups have already reported and, as a result, publicity is being increased and, at the same time, simplified. A range of goods, mainly of the office requisites type, is shortly to be introduced to provide alternatives to cash for nominal awards. The more recently formed group on awards policy is only now coming to grips with its task; this is to propose a set of principles which can be offered for general guidance. So far, enquiries have revealed little previous work on this subject which might have a direct application. A high proportion of the useful suggestions received in the Civil Service produce benefits which it is extremely difficult to quantify in money terms. In this we are not unique; other schemes have produced systems to guide the assessment of awards for suggestions of this kind. The problem is in devising a system which can be applied generally over the wide diversity of work and organizations in the Civil Service. In the absence of a generally accepted system the difficulty of securing conformity of treatment of suggestors is obvious.

Table A opposite shows Service-wide activity in the field of staff suggestions over the past three years, and *Table B* is a list of awards of over £100 made in the 12 months ending 30th September 1972.

It might be asked what evidence there is that Civil Service staff suggestions schemes are cost effective. Since many suggestions yield intangible benefits, and since many of the tangible benefits can only be calculated approximately, it is not possible to produce precise figures. However, on the basis of figures which have recently been collected, there is reason to believe that the annual return on investment in suggestions schemes is probably of the order of 50 cent.

Table A

STAFF SUGGESTIONS SCHEMES

Returns – 1969-72

Year	Number of staff in schemes	Number of suggestions received	Number of suggestions adopted	Highest award (£)	Total paid in awards (£)
1969/70	1, 058, 951	8, 549	2, 073	250	12, 660
1970/71	1, 145, 025	10, 483	2, 371	200	14, 176
1971/72	1, 059, 269	10, 999	2, 259	500	15, 989

Recent Awards of over £100

Table B

Department	Grade and National Salary Scale of Suggestor	Brief Description of Suggestion	Quantifiable Benefits	Unquantifiable Benefits	Award
Ministry of Defence	Chief Technician, RAF (£1, 750 - £2, 500)	A revised system for recording the use of electrical engineering test equipment to ensure its efficient use.		Increased safety and and reduction of surplus equipment	£100
Department of the Environment	Professional and Technology Officer Grade 1 (and others) (£2, 910 - £3, 760)	That portable tape recorders be used by estate staff on field work in a manner which enables the output to be used for accounting purposes.	£20, 000 a year		£400
Department of the Environment	Assistant Technical Officer Grade 1 (£1, 465 - £2, 090)	A method of laying close cover carpet which avoids damage to floors and permits re-use of materials.	£10, 000 a year		£600
Department of Health and Social Security	Clerical Officer (£545 - £1, 489)	That, in cases where pensioners retire after the normal retiring age, weekly declarations of Nil. earnings be dispensed with for the period before a pension book can be issued.	£13, 000 a year		£500
Department of Health and Social Security	Technical Officer Grade 1 (£2, 390 - £2, 910)	That, while being re-conditioned, invalid carriages should be treated with approved rust preventatives.	Working up to £15, 000 a year and then continuing at that level.		£160
Department of Trade and Industry	Temporary Telecommunications Technical Officer Grade III (£1, 815 - £2, 275)	The conception and preparation of a computer program to check the accuracy of radar displays at airports.		Increased air safety	£250
Department of Trade and Industry.	Telecommunications Technical Officer Grade II (£2, 275 - £2, 575)	That all video map data be held on a computer file, updated as necessary, and used instead of manual methods to prepare new video map plates when required.	£4, 800 in first year. Lesser sums thereafter	Faster preparation of map plates and increase in capacity of drawing office staff.	£300

Machinery of Government in Great Britain

Main changes during 1972

Structure of Government

Although it did not directly affect the number of Ministers in the Government, the Ministerial and Other Salaries Act 1972, which came into effect in April, established a new structure of Ministerial offices. The Act introduced a three-tier system for Ministers' pay and changed the limitations on numbers of Ministers so that the resulting structure more accurately reflects the organization of Government Departments as it has developed in recent years.

The three tiers are set out in Schedule 1 to the Act (Parts I, II and IV). The first tier consists of Cabinet Ministers (other than the Lord Chancellor who is separately mentioned in SI(2)), i.e. the Prime Minister, the Chancellor of the Exchequer, Secretaries of State and the Minister for Agriculture, Fisheries and Food who is the only remaining "Minister" in charge of a large Department. Five other posts are included in this tier when their holders are members of the Cabinet. These are the Chief Secretary to the Treasury, the Lord President of the Council, the Lord Privy Seal, the Chancellor of the Duchy of Lancaster and the Paymaster-General.

In the second tier are the Minister of Posts and Telecommunications, Ministers of State, the Financial and Parliamentary Secretaries to the Treasury and the holders of the five offices mentioned above when these are not in the Cabinet.

The new limitations on numbers are 19 for the number paid at the level appropriate to Cabinet Ministers (including the Prime Minister, but excluding the Lord Chancellor), and 46 on the overall number of Ministers who may be paid at the first and second tier levels. This limit excludes the law officers and the Lord Chancellor.

The third tier consists of the various Government Whips and Parliamentary Secretaries. There is a new limit of 30 on the number of paid Parliamentary Secretaries (not including the Parliamentary Secretary to the Treasury), seven on the number of paid Assistant Government Whips and five on the Lords-in-Waiting (Government Whips in the Lords).

At the beginning of the year there were 17 Ministers in the Cabinet. This was increased to 18 in April, with the appointment of the Secretary of State for Northern Ireland. In November there was a Ministerial reshuffle and an extra member of the Cabinet was appointed, bringing the total to 19. The new appointment was the Minister for Trade and Consumer Affairs, who is paid at the highest Minister of State level

(£9,500) and does not count against the statutory limit of 19 mentioned above. The new post replaces that of the Minister for Trade.

The number of Ministers of State has increased during the year from 23 to 29. The new posts are the Minister for Industrial Development in the Department of Trade and Industry, three Ministers of State for the new Northern Ireland Office and two additional Ministers of State for the Foreign and Commonwealth Office and a new one for the Ministry of Agriculture, Fisheries and Food. The Minister of State, Defence Procurement, in the Ministry of Defence has lapsed as a result of the November reshuffle.

Transfers of Departmental functions

There have been no Transfer of Functions Orders during 1972, but two transfers have taken place, one by legislation and the other by administrative act.

Northern Ireland Office

The effect of the Northern Ireland (Temporary Provisions) Act 1972 was to transfer all the functions and responsibilities of the Stormont Parliament and the Northern Ireland Civil Service to the Secretary of State for Northern Ireland. At the same time, the Secretary of State took over the Northern Ireland Department of the Home Office. The Secretary of State for Northern Ireland now administers Northern Ireland directly, assisted by the Northern Ireland Government Departments and by the small Northern Ireland Office based in Whitehall and Belfast.

The Act also provided for the Secretary of State to establish a Northern Ireland Commission as an advisory body to help him discharge his functions relating to Northern Ireland. The Act is a temporary measure and will expire at the end of one year, though there is provision to extend the period by Order-in-Council. Whilst the Act is in force, laws made under the powers previously held by the Northern Ireland Parliament may be made by Order-in-Council at Westminster.

Her Majesty's Stationery Office and the Central Office of Information

In May 1972 ministerial responsibility for HMSO and the COI was transferred from the Chancellor of the Exchequer to the Minister for the Civil Service. In practice, this means that both bodies are now responsible to the Lord Privy Seal, who has day-to-day responsibility for the Civil Service Department. Neither body has a statutory existence and therefore no Transfer of Functions Orders were required.

Changes made by legislation

Transport Holding Company

The Transport Holding Company Act 1972, which received Royal Assent in March, provided for the dissolution of the company.

Independent Broadcasting Authority
In June, the Independent Television Authority was re-named the Independent Broadcasting Authority by the Sound Broadcasting Act 1972, which extended the Authority's functions to include the provision of local commercial sound broadcasting services.

Value Added Tax Tribunals
The Finance Act 1972 makes provision for the establishment of Value Added Tax Tribunals in England and Wales, Scotland and Northern Ireland. The Tribunals come under the President of Value Added Tax Tribunals. Value Added Tax is due to be introduced on 1st April 1973.

Industrial Development Advisory Board
This Board was established under the Industry Act 1972 which received Royal Assent in August. The Board advises the Secretary of State for Trade and Industry on the giving of selective financial assistance to industry under Part 2 of the Industry Act. It also advises generally on industry-wide problems.

Departmental Agencies and Other Bodies
A number of Departmental Agencies have been created during the year. They, and other changes, have included the following:

Employment Services and Training Services Agencies
The creation of the Employment Services Agency within the Department of Employment was actually announced in December 1971. The new Agency is responsible for the general nationwide service for filling job vacancies, the Professional and Executive Register, the Occupational Guidance Service, and various specialist services. In parallel with this and to match it a Training Services Agency has been established. Each Agency has its own Chief Executive. (It was announced in November 1972 that a Manpower Services Commission is to be established which will have responsibility to the Secretary of State for Employment for the employment and training services. The Commission will take over responsibility for the Employment Services and Training Services Agencies.)

Central Computer Agency
The Agency was set up within the Civil Service Department on 1st April 1972 to promote the application of computer systems to government administration with the aim of improving its efficiency and widening policy choices. Four Divisions assumed responsibilities previously spread over a number of Departments and brought together the work of the former Computer Division of the Civil Service Department in policy and planning, assistance to departmental projects, and systems and software advice with that of technical support previously provided by the Department of Trade and Industry. It also assumed

financial control of ADP in central government from the Treasury and responsibility for contractual policy and procurement of computers and allied equipment from Her Majesty's Stationery Office. At the same time the Central Computer Bureau at Norwich was taken over.

Property Services Agency
The Agency came into being on 1st September 1972. It is part of the Department of the Environment and is responsible for the provision to other Government Departments of property management services, building construction and maintenance, and the appropriate supplies.

The Industrial Development Executive
The setting up of the IDE was announced in the Government's White Paper (*Industrial and Regional Development*—Cmnd. 4942) published in March 1972. The IDE is part of the Department of Trade and Industry and has special responsibility for private sector industry generally and for industrial development in the assisted areas. The IDE is headed by the Minister for Industrial Development working under the broad direction of the Secretary of State for Trade and Industry. As described above they are assisted by the Industrial Development Advisory Board.

British Overseas Trade Board
The British Overseas Trade Board was established on 1st January 1972. It took over the existing functions of the BNEC and the DTI for export promotion. Its main tasks are to give broad direction to the execution of export intelligence work, work on trade fairs and other promotional activities overseas, the schemes for financial support for firms to participate in missions and for inward commercial visits to this country. The Board is serviced by DTI staff.

The above article was prepared by MG 1 Division, CSD. Readers may like to know that an article describing developments in the organization of Government Departments will be appearing in the May 1973 edition.—EDITOR.

Book News

THE MANAGEMENT OF GOVERNMENT

By John Garrett. *Published by Penguin Books, price 60p.*

Books on industrial management are legion, but there are few which deal comprehensively with management in government. It was, therefore, a pleasure to greet John Garrett's new volume in the Pelican Library of Business and Management.

Mr. Garrett is a leading management consultant who has had a wide experience of managerial problems inside and outside government. He believes that despite the many adjustments the Civil Service has made over the years to cope with the huge expansion of its duties and functions, it has not yet fully accepted the managerial implications of its present size and complexity. His aim is to inform and stimulate those interested in the administration of our public affairs.

The book begins by tracing the development of the Service from its modest nineteenth-century origins to its present size of about half a million non-industrial civil servants, and by summarizing the managerial structure and the political environment in which its managers must operate. There follows a chapter recounting the growing criticisms of the higher echelons of the Service which culminated in the setting up of the Fulton Committee, a brief review of its report, and a note of progress in implementing its recommendations. The remainder of the book consists of chapters on organization, planning, control, accountable management, management services and personnel management. Most of them begin with a brief summary of what follows, including useful definitions of the subject. Thereafter follows a description of present practice in industrial management. This leads to consideration of developments in the Service and elsewhere and discussion of the possible lines for future change.

Mr. Garrett was a member of the Management Consultancy group which reported to Fulton and his views are, therefore, those set out in Volume 2.* Thus, although he is in agreement with much of the substance of the main report (Volume 1),* he has no wish to foster industrial management techniques unchanged in a governmental environment to which they are not fully suited. Rather he believes that managerial techniques tried and approved elsewhere could be adapted to Civil Service needs, and that the adaptation must be based on experiment and research. He sees the Civil Service as being imperfectly served in the fields of personnel and management information, although in other aspects their systems and resources compare favourably with most of industry. He has read widely and he supports his assessments by frequent and apposite quotation.

As a compact assessment of the state of management of the Civil Service set in context this book can be firmly recommended. For anyone engaged upon or interested in the management of public administration, it should be mandatory reading.

D. J. M.

*Cmnd. 3638, published by Her Majesty's Stationery Office; price 87½p (Volume 1), 52½p (Volume 2).

As publisher for Parliament and the Government, Her Majesty's Stationery Office produces more titles each year than any other publishing organization in the country. About 6,500 different books, pamphlets and periodicals are published annually, covering a very wide range of subjects.

HMSO has recently issued three useful items which are of interest to anyone involved in the management and control of an enterprise. Prepared by the Central Management Library, CSD, each is a brochure listing a selection of the many titles published by HMSO under three headings: Management Techniques; Management; and Computers. A short description of the work and details of price are included under each title.

Management Techniques lists some of the glossaries and short expositions of techniques available from HMSO. A wider range of studies on management and decision making are listed in *Management*; there are separate sections on management education, financial management control, management services, marketing, property management, industrial relations, and many others. *Computers* lists some of the books and reports published by HMSO on computing topics. Together the three brochures list nearly 100 titles.

The brochures are available free of charge both inside and outside the Service, and may be obtained from any one of the eight Government Bookshops in the UK or by staff in Government Departments through their normal publication demand procedures.

J. R. G.

A number of other management publications have been received recently from publishers. Space does not permit a full review, but a note of their titles and cost is included below.

Understanding Company Financial Statements by R. H. Parker. Published by Penguin Books, price 60p.

Management and Production by Ray Wild. Published by Penguin Books, price 60p.

Management Decisions and the Role of Forecasting edited by James Morrell. Published by Penguin Books, price 60p.

Integrated Marketing by B. G. S. James. Published by Penguin Books, price 60p.

International Investment edited by John H. Dunning. Published by Penguin Education, price 70p.

Banking for Profit—The Efficient Use of Resources based on the seminar held at Cambridge in September 1972. Published by The Institute of Bankers, price £1.

Design of Jobs edited by L. E. Davis and J. C. Taylor. Published by Penguin Education, price £1.

Letters to the Editor

Personnel Management—What Can You Expect?

Dear Sir,

I was most interested to read your Editorial Note in the November 1972 edition of the *O & M Bulletin* announcing the change of title and the consequent change of content in the publication from 1973 onwards. It is probably therefore one of those occasions when it would be pardonable to look back just a little at the early cyclostyled days of the *Bulletin*.

The first few volumes of the old *Bulletin* had a dynamism and air of enthusiasm about them which must have done a great deal to educate and inspire a whole generation of management do-gooders within the British public service and to some extent outside it. One need only mention people like Pitman, Balliol-Scott, Simpson, Jefferies, Bunker, Milward, who were all directly involved in this work during the 1940s and early 1950s and who had close connections with a similar generation of managers in industry and commerce (Heyworth, Ryan, Pollock, Courtown, etc.), to realize how the dynamic tone of the early editions of the *Bulletin* came about.

Reading Mr. Drake's article in the 141st edition, my mind went back to another article written by Jock Simpson (later Sir John Simpson) in the 7th edition. It was entitled "Accentuate the Positive", after a pop song of the day, and it too tried to argue the need for a positive approach by Personnel Management and Establishments to the problems of the line manager and the enterprise as a whole.

There are a number of differences in the approach (for a start Simpson, as a discreet career civil servant, did not quote Stalin with partial approval!) and there have been changes in the terminology, but both in effect state the need for people in a staff role to regard themselves as having a positive duty to go out and assist the line manager in

his task of getting the work of the organization done efficiently and economically. To wait for the manager to "put up a case" which is then looked at in a quasi-judicial way with other basically subsidiary factors sometimes being allowed to dominate, "Accentuates the Negative" and is the antithesis of good staff work.

It might be an interesting bridge between the two journals if you were to reproduce Sir John Simpson's article of 1946 in the first edition of MANAGEMENT SERVICES IN GOVERNMENT. I am quite sure the lessons in it and in Mr. Drake's approach still need to be digested and put into effect by many of us.

Yours faithfully,

J. P. MILLER
Home Office, Police National Computer Unit

We are grateful to Mr. Miller for his suggestion to reprint "Accentuate the Positive"; unfortunately, it arrived too late to consider for this edition. But we hope space might be found to reproduce it, and possibly other early O & M Bulletin *articles, in future editions of* MANAGEMENT SERVICES IN GOVERNMENT.—EDITOR.

O and M Thoughts on Training

Dear Editor,

D. D. Wellman's contribution "O and M Thoughts on Training" in the November 1972 issue of *O & M Bulletin*—a journal whose metamorphosis many of its original readers will surely mourn—most certainly has had the authentic O and M reaction from one whose training experience is almost antedeluvian, and seemed, until this stimulus arrived, as good as forgotten. May this writer, now many years retired, who received way back in the 'thirties his first training assignment as a recently promoted Executive Officer in the Post Office Stores Department, as it then was, presumptuously assume that his immediate reactions could be of interest to present practitioners. I have a suspicion that, in this, as in many directions, *plus ça change* is a not altogether inappropriate tag to apply.

Three topics come particularly to mind:

Homogeneity of the training group. Of course, this stands to reason, if economy is to be achieved. But the idea can be carried too far. Variety in the experience of the group is important. In the 'fifties, in the Ministry of Pensions and National Insurance (MPNI), supervision and management training threw up problems due, in the case of supervisors, to the wide age span and, in the case of managers, to the considerable variation in the size of their offices. We had EO offices then with perhaps half a dozen staff and, at the other end, SEO offices with staffs between 50 and 100.

In the first place it was argued that there was little point in bringing in older supervisors to the courses. They would soon retire; they were beyond learning; they had no desire to come, and were inclined to regard any suggestion that they could do with some training as an insult to their intelligence and experience; we should merely be introducing an antagonistic element where maximum co-operation was essential. In fact we found that bringing them into the training group was an effective way of breaking down their prejudices, an important training gain in itself. Many of them, in a quite natural impulse to show off, were liberal in their contribution from their pool of experience, often more valuable to their less experienced if brighter juniors than the talks and demonstrations of experts and other wiseacres. There was some difficulty in getting this view over to the authorities, but in the result it was laid down that all were entitled to attend a course and I am sure we derived a double gain through: (a) an improvement in public relations in getting the co-operation of those who were generally disgruntled because of their failure to advance as far as they considered to be their due; and (b) having at the service of the group the contribution of experience only to be obtained from those who have been through the mill.

On the second point it was strenuously argued that for effective management training managers of more or less equivalent rank should be brought to specific courses. It was found in practice that managers of varying-sized offices, in which the management content varied widely, gained from hearing the problems of managers of different sized offices from their own. They not only had the opportunity of putting themselves in the other fellow's shoes, but were also able to see empirically that, despite these and other variations, there are management principles and practices which are applicable in widely differing situations. In any case, regionally, we should have been confronted with special problems of course time-tabling if we had had to confine courses to each of several managerial categories.

Size of the training group or class. The problems of economy and timing figure prominently in this—training strategy as distinct from tactics. I thoroughly agree with Mr. Wellman that groups should not be too large, particularly in management training, if maximum benefits are to accrue. I would even regard his "group of some 12 to 18 members" as tending towards the high side, although here the predominant method of instruction is important. In employing the syndicate system and preferring more than two syndicates, each under its own chairman, it would seem that three syndicates of five or six members would be about right, which would fall within Mr. Wellman's figures. However, this method tends to be expensive in the time factor, and has not the scope of the lecture method in its various forms—of which more below.

In fact, we found in the Midland Region of MPNI that sending out invitations to a dozen participants in such courses was about right. This ensured an average of 10 per group, for there were usually last

minute cancellations for one reason or another. A group of as small as eight was satisfactory although on one or two occasions when only seven assembled we found it too small. Much depends upon the degree of individual participation. In most groups there are the quiet ones who have to be drawn out, a process that cannot go far enough in the large group, unless the course lasts long enough for the trainers to get to know their clientele individually. I should say that for the shorter course, in which participatory training is essential, a group of nine to 12 is the ideal.

The lecture method. Mr. Wellman remarks: "A sacred cow munching contentedly in the training field is the lecture. It is a concept handed down to us from antiquity that people learn best when they are talked at". I could hardly believe my eyes: surely not, and after all these years!

Training calls for class participation and the set lecture—which does have its uses—is the best way to cut this down to a minimum, even to nothing if interjections and after-probings are not provided for. I remember clearly when, in the Ministry of Labour and National Service at the end of the last war, we were providing what I believe we called "Returned Warrior Courses", we were insistent upon using the set lecture sparingly, and impressed upon our outside contributors that these people certainly did not want to be talked at and that discussion methods were at a premium. In fact our main problem was with the experts from other branches whose knowledge was essential but aptitude for training minimal. We needed them because these trainees needed to be brought up to date in intervening developments which only the practical man on the job could explain with conviction. In fact the trainees were eager to be briefed and avid for information; discussion never flagged and the time was always too short. The courses literally sold themselves.

There are incidental troubles with the lecture. Most lecturers, even the academically experienced, try to put over too much *and almost invariably go on too long*, with the result that their hearers are surfeited if not bored—unless the lecturer is also an actor, or wisely invites relevant intervention at any stage.

A possible alternative to the set lecture is for the lecturer to provide a brief to be studied in advance and to limit himself to, say, 10 minutes in introducing it, the rest of the session to be devoted to discussion. Unfortunately this would usually break down because of course attenders' widespread aversion to reading any script before they enter the class-room, and their widespread inclination then to read any script that may lie before them rather than to pay attention to what is going on at the top table. The right answer in training is never easy, depending upon the particular circumstances.

I have a feeling that all trainers and educators try to pump in too much information in too little time, and that "going in one ear and out

of the other" is literally applicable to most courses. It would be a good idea, I have long felt, if all formal instruction, whether at colleges or training centres, was confined to the mornings, but it is unlikely that either the economists or the economizers would ever stand for this, even if it could be proved effective. It would certainly be no gain if the trainee in post were expected to return to his normal duties in the afternoon, and I remember an occasion when staff training branch was called to account for allowing trainees at the centre to enjoy shorter attendances than in the offices. I hope this would not be considered a correct O and M approach today.

As to measuring the results of a course in improving the trainee's performance on his work, I have yet to be convinced that this can be done, except in a rough and ready way, even where numerical tests can be devised. There are too many non-training factors to be eliminated before an assessment of the training contribution can even be attempted. Training, like education in the wider sense, calls for faith and its results can be measured, if at all, over the long term and in respect of its general impact rather than what it has done for any particular individual, who may have gained in effectiveness despite, rather than because of, the training he has received. Even assessments of general results can leave one with gnawing doubts, and perhaps it is right for trainers to be unrepentant sceptics lest they go on blithely doing more harm than good. Even if—albeit unwisely—they dislike their O and M critic, they should at least grant him the virtue of doing them the medieval jester's service of giving them from time to time the essential jolt.

Yours sincerely,

E. N. GLADDEN,
M.Sc.(Econ.), Ph.D.(Public Admin.)

Dr. Gladden entered the Civil Service in 1913, *and was employed in the Post Office, Ministry of Labour, and Ministry of Pensions and National Insurance up to his retirement in* 1958. *He is the author of a number of books on the Civil Service and Public Administration.*—EDITOR.

Personnel Management—What Can You Expect?

Dear Sir,
I read Mr. Drake's article in the November 1972 edition of *O & M Bulletin* with interest and wonder how far the following point of view is acceptable to other readers.

It seems to me that uncertainty in the social system and particularly in the matter of rewards for ability is highly desirable. However refined the process of selection for advancement becomes it must involve a judgment about potential. But performance (and particularly ambition) can be seriously affected by changed external circumstances and by the passage of time; job content may change for good or ill in

relation to the abilities of the individual; job features which may well be new to an individual on promotion (e.g. staff management) may prove weak spots in practice. No system can be watertight.

However much we may try we seldom see ourselves as others see us. On the whole, I suggest, we reckon ourselves more able than we really are and occasionally one comes across cases of disastrous lack of judgment in self-appraisal. Yet self-confidence based on a reasonably accurate estimate is surely the key to adequate performance.

If you destroy a person's confidence in himself you help to create potentially serious social difficulties. Any system of selection which succeeded in labelling the vast majority as unsuitable for further advancement for good, demonstrable, reasons would destroy a great many people who can now take refuge behind the chance factors which still contribute heavily to the selection of individuals for particular posts. The unsuccessful can blame the system and keep their self-respect.

I suggest we eliminate these chance factors at our peril.

Yours faithfully,

H. L. Cook
Department of Education and Science

Computer Installations for Government Departments

Details of computers ordered during the period July to September 1972 are shown in the following table. These computers are additional to those listed in the May, August and November 1972 editions of the *O & M Bulletin*.

DATE OF ORDER	DEPARTMENT†	LOCATION	MAIN USES	MANUFACTURER* AND TYPE OF COMPUTER
1B Computers on order for administrative and general purposes				
August 1972	DHSS	Reading	Unemployment benefit payment: Centre 1	2 × ICL 1904S
August 1972	DHSS	Scotland	Unemployment benefit payment: Centre 2	2 × ICL 1904S
September 1972	DE	Runcorn	Pay, statistics, professional and executive register	ICL 1904A
September 1972	CSD	Chessington	Civil Service Personnel Record Information System for Management	ICL 1904S
September 1972	MOD (Army)	Hong Kong	RAOC stores, etc.	ICL 1902A
2B No computers were ordered during the given period for scientific and technical purposes				

† Department Key (*Column* 2)

CSD	Civil Service Department
DE	Department of Employment
DHSS	Department of Health and Social Security
MOD (Army)	Ministry of Defence (Army)

* Manufacturer Key (*Column* 5)

ICL	International Computers Ltd.

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